

Appl. No. 10/806,514
Amdt. dated 3/27/07
Reply to Office action of 12/27/06

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1,2 and 4-18 remain in the application. Claims 1, 2 and 4-8 are subject to examination and claims 9-18 have been withdrawn from examination. Claims 5 and 6 have been amended. No claims have been added or canceled herein.

In "Claim Rejections - 35 USC § 112," item 5 on pages 2-3 of the above-identified Office Action, claims 5 and 6 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner states that it is not clear on what total mass the percentages recited in the claims are based. Although it is believed that the claims were definite in their previous form, the interpretations given by the Examiner have been incorporated in the claims.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, second paragraph. The above-noted changes to the claims are provided solely for clarification or cosmetic reasons. The changes are neither provided for overcoming the prior art nor do they narrow the

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scope of the claim for any reason related to the statutory requirements for a patent.

In "Claim Rejections - 35 USC § 102/103," item 6 on pages 4-6 of the Office Action, claims 1, 4 and 6-8 have been rejected as being fully anticipated by or, in the alternative, obvious over U.S. Patent No. 5,205,888 to Mochida et al. (hereinafter Mochida) under 35 U.S.C. § 102(b) or 103(a).

In "Claim Rejections - 35 USC § 102/103," item 7 on page 6 of the Office Action, claim 2 has been rejected as being obvious over Mochida in view of Handbook of Carbon, Graphite, Diamond and Fullerenes (hereinafter Handbook) under 35 U.S.C. § 103(a).

In "Claim Rejections - 35 USC § 102/103," item 8 on page 7 of the Office Action, claim 5 has been rejected as being obvious over Mochida in view of U.S. Patent No. 4,998,709 to Griffin et al. (hereinafter Griffin) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and, therefore, the claims have not been amended to overcome the references.

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Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, a connecting piece for carbon material electrodes, comprising:

a carbon material electrode connecting piece body,
carbon fibers in said carbon material electrode connecting piece body, said carbon fibers having oxidatively activated surfaces, and
a coating added to said carbon fibers, said coating being carbonized as a carbonization product of a coating material selected from the group consisting of wax, pitch, natural resins, thermoplastic polymers, and thermosetting polymers,
said carbon material electrode connecting piece body having a linear coefficient of thermal expansion of from -0.5 to +0.1 $\mu\text{m}/(\text{K}\cdot\text{m})$ in a direction parallel to a lateral surface thereof, and from 1.7 to 2.1 $\mu\text{m}/(\text{K}\cdot\text{m})$ in a normal plane orthogonal thereto.

In Response to Arguments, item 9 on pages 7-8 of the Office Action, the Examiner has given reasons for maintaining the art rejections over Mochida. The Examiner has stated that:

"applicant asserts that the difference between the claimed subject matter and the subject matter disclosed by Mochida are as follows (a) a carbonized coating added to the carbon fibers having oxidatively activated surfaces; and (b) the omission of the above described preliminary heat treatment of about 600°C in an inert gas atmospheres."

The Examiner has also commented that:

"applicant has generally pointed out the difference between the reference of Mochida and the claimed subject matter, but did not further discussed as to what is the

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significance of these differences. Therefore, the applicant's response is incomplete with respect to the rejections of Mochida."

Finally, the Examiner has stated:

"With respect to the applicant's pointed difference (a), note that the claim requires "carbon fibers having oxidatively activated surfaces, and a coating added to said carbon fibers, said coating being carbonized as a carbonization product of a coating material selected...pitch". Mochida teaches pitch impregnated carbon fiber assembly wherein the mesohase pitch (coating) achieves carbonization yield of 100% (column 3, lines 14-15). Additionally the applicant has already agreed with the examiner that Mochida teaches that the carbon fibers are subjected to a preliminary surface treatment such as oxidation. Therefore, Mochida meets the requirement of "carbon fibers having oxidatively activated surfaces, and a coating added to said carbon fibers, said coating being carbonized as a carbonization product of a coating material selected...pitch" as claimed."

With respect to the applicant's pointed difference (b), it is the examiner's position that said difference is irrelevant to the basis of the rejection because it unclear as to what is the significance of (b) to the rejection of Mochida.

Applicants will point out to the Examiner below how the differences between the invention of the instant application as claimed Mochida are significant and relevant.

The process disclosed by Mochida does not describe the carbonization of the coating before adding the fibers to the green mass formed of coke and binder pitch (see Example 2 and the description of the production process in the disclosure

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of the instant application).

Mochida clearly teaches in a different direction than the invention of the instant application because Mochida teaches "If the preliminary heat treatment is excessive, the binding property of the prepgs will decrease to increase the chance of delamination in subsequent stages and it sometimes becomes impossible to obtain a carbon fiber reinforced carbon material having a desired strength" and "For this preliminary heat treatment, an appropriate heating condition must be selected in such a way that the mesophase pitch will not be totally carbonized nor lose its binding property." See Mochida, column 4, lines 36 to 41 and column 5, lines 35 to 39).

Even if the Examiner argues that the carbonization and graphitization described by Mochida would lead to a carbonization and graphitization of the above-mentioned coating, the effect would not be the same.

A possible explanation could be that the carbonization of the coating prior to the mixture of the coated fibers into the green mass leads to a better incorporation into the received body. The outstanding CTE values of the claimed connecting piece bodies prove this. The cited table of the Handbook

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reference further shows that this is a technical field with a great relevance where merely small improvements could be achieved and are worth large efforts.

Applicants strongly disagree with the Examiner's statement that the mass fraction of coated fibers in the received connecting piece body or the mass fraction of the coating on the used fibers is anticipated or obvious in view of Mochida or any of the other cited references.

A comparison of the Example in the Griffin reference with the Example disclosed in the instant application shows that the invention reaches a CTE_L (Linear Coefficient of Thermal Expansion) of $0.6 \times 10^{-7} /K$ of the electrode connecting piece even with a 2.32 percent per weight mass fraction of carbon fibers. In contrast, Griffin reaches a CTE_L of $1.3 \times 10^{-7} /K$ with only a 13 percent by weight mass fraction of carbon fibers (see the Table which appears in column 6 of Griffin).

Clearly, none of the references, that is neither the Mochida reference, nor the Handbook reference nor the Griffin reference, show the limitations recited in claim 1 of the instant application.

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It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

Rejoinder of withdrawn claims 9-18 is again requested upon allowance of claim 1, as required by MPEP 821.04.

In view of the foregoing, reconsideration and allowance of claims 1, 2 and 4-18 are solicited.

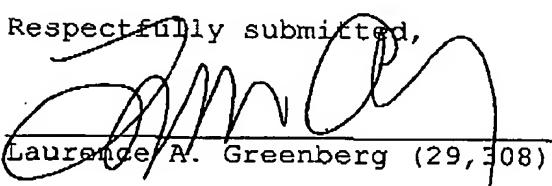
In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time is required, petition for extension is herewith made. Any extension fee associated therewith should be charged to Deposit Account Number 12-1099 of Lerner Greenberg Stemer LLP.

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Please charge any other fees that might be due with respect
to Sections 1.16 and 1.17 to Deposit Account Number 12-1099
of Lerner Greenberg Stemer LLP.

Respectfully submitted,



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LAG/lq

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